AMENDMENT OF SOLICIATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE	PAGE 1 OF 2 PAGES

2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5A. TITLE:	5B. PROJECT NO.
02	03/11/2008	CB 080065	2009 Presidential Inaugural Stands	

6. ISSUED BY	CODE	9901	7. ADMINISTERED BY (If other than Item 6)	CODE
AOC - Procurement Division 2nd & D Streets, SW Room H2-263 WASHINGTON, DC 20515			**AOC - Procurement Division** 2nd & D Streets, SW ATTN: Matt Hazlinsky Room H2-263 WASHINGTON, DC 20515	

8. NAME AND ADDRESS OF CONTRACTOR (No., street, country, state and ZIP Code)	(X)	9A. AMENDMENT OF SOLICITATION NO.
		RFP080015
	X	9B. DATED (SEE ITEM 11) 02/21/2008
		10A. MODIFICATION OF CONTRACT/ORDER NO.
		10B. DATED (SEE ITEM 11)
CODE / FACILITY CODE		

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

[X] The above numbered solicitation is amended as set forth in item 14. The hour and date specified for receipt of Offers [X] is extended, [ ] is not extended,

Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing items 7 and 14, and returning __1__copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment your desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)
SEE LINE ITEMS

13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

CHECK ONE	
	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
	D. OTHER (Specify type of modification and authority)

E. IMPORTANT: Contractor [ ] is not, [ ] is required to sign this document and return _____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitaiton/contract subject matter where feasible.)
See page 2 of this amendment.

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) Matt Hazlinsky Contracting Officer	
15B. CONTRACTOR/OFFEROR _____ (Signature of person authorized to sign)	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA BY_____ (Signature of Contracting Officer)	16C. DATE SIGNED

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Previous edition unusable

STANDARD FORM 30 (REV. 10-83)
Prescribed by GSA FAR (48 CFR) 53.243

Amendment No. 002
RFP No. 080015

This Amendment No. 002 is issued to the above referenced RFP Number in order to:

1. Include a list of attendees who were present at the pre-proposal meeting/site visit,

2. Answer any questions asked as of March 10, 2008,

3. Incorporate the Life Safety Review & Concept Final Report dated March 7, 2006 as Attachment 9 into the solicitation and resulting contract,

4. Extend the due date for receipt of proposals to **2:00pm on 3/28/2008**.

Attachments:

List of Attendees (1 pages)
Questions (2 page)
Life Safety Review & Concept Final Report dated March 7, 2006

CONSTRUCTION OF 2009 PRESIDENTIAL INAUGURAL STANDS
WASHINGTON, D.C.
RFP No. 080015

PRE-PROPOSAL MEETING & SITE VISIT
LIST OF ATTENDEES
MARCH 7, 2008 - 10:00 a.m.

LIST OF ATTENDEES

Names	**Representing**	**Telephone Numbers**
Mark Tsirigos MarkT@UBS1.com	Universal Builders Supply, Inc.	301-772-7171
John Gould John.gould@skanskausa.com	Skanska	301-795-3126
Carlo Farrugia Carlo.farrugia@skanskausa.com	Skanska	301-795-3110
Ronald Lee Rlee@tbius.com	Tompkins Builders	202-438-4454
Jeff Miller jmiller@tbius.com	Tompkins Builders	202-438-4452
Tim Vandewalle Tim.vandewalle@christmanco.com	The Christman Company	703-740-5645
John Becker John.becker@christmanco.com	The Christman Company	703-740-5645
Justin Wilson Jsw_scaffold@yahoo.com	American Platform & Scaffolding	410-799-2476

Representing the Architect of the Capitol

Matt Hazlinsky	Contract Officer	202-226-0994
Perry Caswell	Project Manager	
Don White, Raynell Bennett		

CONSTRUCTION OF 2009 PRESIDENTIAL INAUGURAL STANDS
WASHINGTON, D.C.
RFP No. 080015

CLARIFICATION QUESTIONS AND ANSWERS

1. Question: **With the drawing files being in DGN format and not being able to plot out a legible set of documents. Is the AOC sending PDF drawings to all the bidders?**

Answer: The AOC mailed out (overnight) new cds containing drawings in PDF format to all prospective offerors on Monday, March 10, 2008.

2. Question: **We would like to at this time request an extension in the bid period to fully analyze the drawing once received in legible format.**

Answer: The due date for receipt of proposals is extended to 2:00pm on March 28, 2008.

3. Question: **Will deadline for questions be extended with the bid period as well?**

Answer: The close of business March 10, 2008 deadline for questions that was given at the site visit was a cutoff point for questions that would be answered in Amendment 02. Questions will be accepted throughout the proposal period. However, questions should be submitted as early as possible in order to provide the government adequate time to respond and formally document responses in an amendment to the solicitation.

4. Question: **Are there mechanical or electrical requirements for this RFP or is this installed by others?**

Answer:

A) There is a transformer and a dedicated electrical sub panel beneath the stage which supplies power to the Inaugural stand area. Said transformer and panel are supplied and installed by government forces. The stands contractor picks up his power requirements from that point.
B) The heater and supporting ductwork that is indicated on the drawings are supplied and installed by the government. Bidders should specifically exclude the HVAC work.
C) The wheelchair lift and the connection of same is part of the contractor's work and as such should be included in bid proposals.
D) The lighting and other electrical requirements indicated on drawings E001, E101, & E102 are all part of the scope of work and should be included in bid proposals.
E) Other entities (such as sound system, security, and telecom wiring) are provided and installed by government forces or specific contractors employed by the government (not part of the stands contract). Such work is not part of the Inaugural Stand contractor's scope, but the contractor must coordinate his work with that of the other groups who participate in the overall preparations for the event. This coordination will be overseen and facilitated by the government's C.O.T.R.

5. Question: **Are there any restrictions preventing the contractor from starting sooner than October 6, 2008?**

Answer: Oct 6 is the target date for beginning significant tangible on-site construction activities. Experience has shown that there is much up front planning, measuring, and layout which have little or no impact on staff and visitor traffic and so we would permit such non disruptive activities to happen sooner. Also, in the past, our contractors have done off site activities such as pre-painting of plywood panels or pre-fabricating of welded steel components and the timing of such work is left to the contractor to establish so as to accommodate the project's aggressive schedule. But Oct 6th remains the date when we will be prepared to isolate the effected work area and to restrict staff and tourist traffic in and around the contractor's work zone. That remains the date when substantial on-site construction activities can and should begin.

ARCHITECT OF THE CAPITOL
PRESIDENTIAL INAUGURAL STANDS AND SUPPORT FACILITIES

A.O.C. FILE No. CB05022

LIFE SAFETY REVIEW & CONCEPT FINAL REPORT

March 7, 2006

Prepared by
The SmithGroup, Inc.
and
The Protection Engineering Group, PC

ARCHITECT OF THE CAPITOL
PRESIDENTIAL INAUGURAL STANDS
AND SUPPORT FACILITIES
A.O.C. FILE No. CB05022

LIFE SAFETY REVIEW & CONCEPT FINAL REPORT

February 28, 2006

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ARCHITECT OF THE CAPITOL

PRESIDENTIAL INAUGURAL STANDS AND SUPPORT FACILITIES

EXECUTIVE SUMMARY

I. INTRODUCTION

A. Every four years the President of the United States in inaugurated. This Presidential Inaugural ceremony takes place at the west side of the US Capitol Building, weather permitting. The planning process for each Presidential Inaugural begins at the completion of the previous ceremony. Following the 2005 inauguration, and in planning for the 2009 Inaugural, a recommendation was made to show how to accommodate the 2005 Inaugural attendance capacity while providing code compliant egress. The Architect of the Capitol (AOC) retained the SmithGroup (SG), an architectural and engineering firm, and the Protection Engineering Group, PC, (PEGroup), a life safety and code consultant, to perform a Life Safety Evaluation of the Presidential Inaugural Stands and Support Facilities, and develop options for seating modifications if required based upon the Life Safety Evaluation. Further details of this evaluation are summarized in the Section of this report titled "Life Safety Evaluation."

B. This is the Final Report in a series of submittals to the AOC which study the impacts and potential solutions to seating for the 2009 Inaugural that are both code compliant and functional for those in attendance. The primary emphasis of this report is on the implementation of the code requirements for the seating areas, developed from the Life Safety Evaluation of the 2005 Inaugural seating and egress, and the AOC review comments received and discussed for the previous submittals and concept plan.

C. In addition to the Life Safety Evaluation this report contains a Design Concept plan for 2009 that reflects the code requirements for access, egress, and handicapped seating, within existing aisle widths and with the incorporation of new egress strategies. The concept plan is the result of previous submittal reviews and has been refined and developed in coordination with the AOC and their vision for the Presidential Inaugural. The concept plan for the 2009 Inaugural is illustrated in two drawings attached to this report.

II. BASIS OF REVIEW AND DESIGN

A. This report, the Life Safety Evaluations and Design Concept are based upon the following:

1. Description/Specifications/Work Statement from the AOC attached to the Contract Authorization letter dated September 30, 2005.
2. Project Kick-off Meeting held on October 20, 2005 at the AOC offices , and drawings of the 2005 Presidential Inaugural Stands distributed to the SmithGroup and PE Group by the AOC.
3. Supplemental meetings:
   a. October 25, 2005, with Howard Wagner (AOC), Bob Anderson (SG) and Mike Thompson (PEGroup).
   b. November 4, 2005, with Mike Thompson and Julie Zalinski (PEGroup), and Don White and Perry Caswell (AOC) at the west front of the US Capitol.
4. Site reviews and surveys by the PEGroup on November 4, 2005, and by SmithGroup on November 10, 2005.
5. Initial Life Safety and Design Concept Submittal, dated November 28, 2005.
6. The Initial Submittal Review Meeting held at the offices of the AOC on December 1, 2005 (Minutes of Meeting Attached and AOC Review Comments attached).
7. Second Life Safety and Design Concept Submittal, dated December 19, 2005.
8. The Second Submittal Review Meeting held at the offices of the AOC on January 5, 2006.

III SUMMARY

A. The Life Safety Evaluation of the 2005 Inaugural and the study of options for seating, aisle and egress configurations has resulted in a seating concept for the 2009 Inaugural that is very similar to the 2005 plan. There are still several options and details to be worked out during the Design Development and Construction Document phases of the project (refer to the following sections of

this report), but the proposed seating and egress concept plans for the 2009 Inaugural will meet the code requirements and design criteria as defined and reviewed by the AOC.

ARCHITECT OF THE CAPITOL

PRESIDENTIAL INAUGURAL STANDS AND SUPPORT FACILITIES

DESIGN CONCEPT

I. RESULTS OF EGRESS ANALYSIS

A. An Egress Analysis of the 2005 Inaugural Seating Plan identified several areas of potential code deficiencies based upon the seating plans, capacities and emergency egress requirements. The potential deficiencies included both the large public seating areas and the restricted seating area for the President and other dignitaries on the inaugural platform.

B. A series of potential seating modifications and egress options were reviewed by the SmithGroup and the Protection Engineering Group to resolve the potential code conflicts and to develop an optimum seating potential based on the code requirements. An Initial Submittal was made to the Architect of the Capitol on November 28, 2005 which cited the code deficiencies and suggested a potential design concept that reflected the minimum code required egress paths and the maximum allowable areas of seating. A second submittal was made to the AOC on December 19, 2005 which further refined the potential seating and egress options to meet the code requirements.

II. SUMMARY OF SUBMITTAL REVIEWS

A. At the Submittal Review Meetings a number of design criteria points were clarified or defined. Major comments included the following:

1. At the Presidential Stage (or Platform) no additional balustrades are to be removed unless necessary (see item 3 below).
2. At the Presidential Stage provide fire-rated separation between the assembly area (stage & grandstand) and the two safe rooms below. This separation will be provided by enclosing the safe rooms in fire-rated gypsum board sheathing.

3. One of the deficiencies noted at the Presidential Stage was that there is only one means of egress for all of the people seated on the stage (with the exception of the President). There are three potential options for providing egress from the Presidential Stage.
   - Option 1- Utilize the existing single exit back through the Capitol Building (this option must be excepted by the AOC Fire Marshal).
   - Option 2- Use the existing Presidential exit stair to the south of the Presidential Stage as an exit after the President and others as designated are evacuated. (This option must be accepted by the US Capitol Police and the Secret Service.)
   - Option3- Remove a portion of the balustrade at the north side of the Presidential Stage to create a second exit through an exit aisle to the north.

   A final decision on which option to use probably will not be made until the 2009 Presidential Inauguration date is much closer. Therefore all three options were analyzed as part of the Egress Study and all three option will need to be indicated on the Construction Documents for the 2009 Inaugural.
4. As much seating as possible is to be maintained on the Pennsylvania and Maryland walkways.
5. The existing aisle widths in the lawn seating area are to be maintained if possible.
6. Lawn seating could be expanded to the west if required (moving fences to the west and into the standing areas), instead of narrowing aisles. The results of the Egress Analysis indicate that additional rows of seating to west should not be required.
7. Grandstands and Stage are to be constructed of wood with two coats of intumescent paint on all surfaces.
8. Handicapped ramps are to remain in the same locations as they were for the 2005 Inaugural.
9. Storage of combustible material beneath the grandstand will be prohibited for the 2009 Inaugural.
10. Wheelchair clusters are to remain the same locations as they were for the 2005 Inaugural.

III. LAWN SEATING AREA

A. The Egress Analysis identified several areas where the code required exit width of

aisles and gates were not being met. Two of the major areas of conflict were the brick paved sidewalks that are extensions of Pennsylvania and Maryland Avenues. The result of the code and design studies of these areas in the Second Design Concept is to redirect some of the egress from major lawn seating areas to exits away from the Pennsylvania and Maryland Avenues. This includes increased exiting to the west, with larger gates and exit pathways through the standing areas.

B. The Egress Analysis also identified that many aisles in the large lawn seating areas were wider then the code required minimum widths and could potentially be reduced in width. This was discussed in the Initial Submittal Review Meeting with the AOC and it was decided that all aisles should be left at the same widths as those used in 2005.

C. The second design concept was developed that utilizes the 2005 Inaugural widths for aisles with new exit widths (gates) at several perimeter fence locations, re-directed egress paths and new exits provided in perimeter fences (and snow fences) at several locations. This design concept plan allowed for all seating to remain in the same location as it was in 2005.

D. There are still several other potential considerations that may effect access/exit locations and widths. Among these are the need for emergency vehicle access and service vehicle access. (How are people with emergencies attended to and removed from the site, and how are services vehicles such trucks for the seating and stair assemblies provided with access to the site.) It is hoped that these issues can be clarified in the discussions with the US Capitol Police Special Events Group.

E. There are several other recommendations for this area made as a result of the life safety evaluation. Refer to the Concept Plan for specific locations and sizes.

1. Provide additional exit gates between the seating areas and the standing areas at several locations.
2. Increase the gate/fence openings at several locations in the perimeter fence of the standing area.
3. Increase the clear exit widths of paths through the standing areas at several locations. (It is understood that these are open grass areas without defined aisle or paths.)
4. Add a new 48" exit gate at the west side of the South-East

Standing Area and a new 59" opening at the west side of the North-East Standing Area..

5. Add new exit gates at the west side of the North and South Standing Areas. (132" wide at the North and 120" wide at the South.)

F. A further refinement of the seating concept may be required before the final submittal. This second concept illustrates a potential for dealing with the existing code conflicts while maintaining the seating capacity and basic 2005 Inaugural circulation plan. It is hoped that this report and the design concept will help to inspire comments from the AOC reviewers and provide a means for further defining design limitations and final concepts.

G. While the code requirements for wheelchair dispersion are recognized, the AOC Fire Marshal permits the number of wheelchair clusters provided for the 2005 Inaugural to remain.

IV INAUGURAL STAGE SEATING

A. The Egress Analysis identified an emergency egress conflict on the Middle Terrace Level at the Presidential Stage. There is only one path of exit up the center aisle up towards the Capitol center doorway for all of the people seated on this stage. NFPA 101 (the Life safety Code) requires a minimum of two exits from this area and a maximum common path of travel of 50 feet. There are three potential solutions to this conflict.

1. The first option for this area is to allow the single exit back through the Capitol Building to remain. Since this is not a code compliant solution, it would have to be deemed acceptable by the AOC Fire Marshal.
2. The second option is to consider one of the two emergency exit stairs on the stage as a required means of egress. The two emergency exit stairs at the west side of the platform were not taken into consideration as "public exits" for the Egress Analysis because it was understood that these two stairways are for the evacuation of the President, Chief Justice and perhaps only a few other designated people. If these stairs are allowed for exiting of others on the Presidential Stage then the number of required exits would

be met. Using this option for the second means of egress would require the review and approval of the Special Events Staff at the US Capitol Police and the Secret Service. This egress option is incorporated into the design concept and egress calculations for the second submittal.

3. The third option for a second exit from the stage would include the removal of a section of the balustrade at the back of one of the two diagonal aisles serving the seats in this area. The amount of balustrade removed would need to be such that a minimum clear width of 48 inches is maintained.

B. The AOC Fire Marshal indicated that the two safe rooms beneath the stage are not contiguous to the stage. Therefore, the rooms are not required by code to have a fire resistance rating. However, given the importance of these rooms and the stage that is located above them, it is recommended that these two rooms have a minimum fire resistance of one hour.

C. The code requirement for wood grandstands is recognized, however, the AOC Fire marshal permits the use of wood in the construction of the grandstands and stage provided that all combustible materials is fire-retardant treated wood and all combustible surfaces are painted with two coats of intumescent paint.

D. The code requirements for non-combustible stage construction are recognized, however, the AOC Fire Marshal permits the use of a non-combustible wood stage provided that all combustible material is fire-retardant treated wood and all combustible surfaces are painted with two coats of intumescent paint.

E. While the code requirements for wheelchair dispersion are recognized, the disbursement and number of wheelchair clusters provided for the 2005 Inaugural will be replicated for the 2009 Inaugural due to security, site control and site access restraints.

V. CONCEPT DRAWINGS

A. The Drawings for the Egress Analysis and the 2009 Inaugural Seating Concept Plans are attached in Section IV of this report.

ARCHITECT OF THE CAPITOL

PRESIDENTIAL INAUGURAL STANDS AND SUPPORT FACILITIES

LIFE SAFETY EVALUATION

I. INTRODUCTION

A. Background

The first Presidential Inaugural was held on the East Front Portico of the US Capitol for Andrew Jackson in 1829. It wasn't until Ronald Reagan's first inaugural in 1981 that the ceremony was relocated to the West Front of the US Capitol. With the exception of Reagan's second inauguration, which was held in the Capitol Rotunda due to extremely cold weather, all subsequent Presidential Inaugurals have been held on the West Front of the Capitol.

The Presidential Inaugural planning process begins at the completion of the previous ceremony and recommendations are formulated and documented for inclusion into the next Inaugural. As part of this process and as a result of current code changes, several egress deficiencies were identified for the 2005 Inaugural event. As a result of this, the Architect of the Capitol (AOC) retained The Protection Engineering Group, PC, under contract with the SmithGroup, to conduct an egress analysis of the 2005 Inaugural event and, from the findings of the analysis, assist the SmithGroup in developing a design concept for the 2009 Inaugural that accommodates the 2005 Inaugural attendance capacity while providing code compliant egress. This Life Safety Evaluation has been prepared to support the 2009 Inaugural design concept developed and presented in Tab 3 (Design Concept) of this report. The egress analysis showing how the design concept is code compliant is presented in Tab 4 (Life Safety Drawings). The purpose of this Life Safety Evaluation is to identify and assess life safety hazards that could endanger occupants and require rapid egress or other measures to maintain safety of the event occupants. This Life Safety Evaluation is required by code to be prepared for large assembly spaces such as the Presidential Inaugural and includes a written assessment of safety measures for possible life safety hazards.

B. Applicable Code

The applicable code for this evaluation, as referenced by the Architect of the Capitol A/E Design Manual, dated February 2004, is as follows:

> NFPA 101, *Life Safety Code*, 2003 Edition, as published by the National Fire Protection Association (NFPA).

It should be noted that the Presidential Inaugural is a unique event that is not specifically accounted for in NFPA 101. However, in order to ensure a design where the level of life safety provided to event attendees meets, at a minimum, the intent of the code, the requirements for new Assembly occupancies, as provided in Chapter 12 of NFPA 101, have been applied to this evaluation.

C. Assumptions and Report Limitations

Major assumptions made in this report are as follows:

1) The Presidential Inaugural held at the US Capitol is like no other event in the United States. While this event provides seating and standing space on the US Capitol West Front for over 50,000 people, the management of the crowds is well orchestrated. Crowd management at this event is based on good communications and coordination between those responsible for the overall operation and those managing the event attendees face to face. The crowd managers have clear roles and responsibilities and excellent training. The scenarios considered as part of this Life Safety Evaluation have taken this into account and are specific to the nature of this event.

2) The President and his party are seated on a temporary structure that is built within the Excedra and above the plaza fountain. Congress and Honored Guests sit behind the Excedra on stepped seating built upon the Middle Terrace and Grand Stairs. The temporary structure on which the President and his party are seated does not meet the requirements for a temporary platform as defined by NFPA 101 because the space between the ground below and the platform is used for purposes other than electrical wiring or plumbing. Therefore, for purposes of this evaluation, this area within the Excedra is considered a stage. The stepped seating on which Congress and Honored Guests are located is considered a grandstand since it provides temporary tiered/stepped seating. Another level of grandstands, called bleachers since they are not provided backrests, is located on the Upper West Terrace. The stage and the grandstands are structurally independent

of one another; however, the entire space is considered the Presidential Stand for purposes of this evaluation.

3) The Presidential Inaugural seating areas consist of a stage, grandstands, bleachers, and folding chairs in the lawn. Beyond the seating areas are several standing areas. For the purposes of this evaluation, the seating areas and standing areas on the West Front of the Capitol are considered to be a single assembly space.

4) It is assumed that adequate exit capacity is available once the event attendees leave the seating and standing areas. For example, adequate capacity is assumed on the north and south sidewalks leading to Constitution Avenue and Independence Avenue, on Pennsylvania Avenue and Maryland Avenues sidewalks, on the Capitol Upper West Terrace, and within the Capitol Building. Furthermore, it is assumed that once occupants have exited the seating and standing areas, they are then in the public way as defined by NFPA 101.

5) For purposes of this evaluation, the seating in the grandstands and lawn seating areas is assumed to be "fixed" seating. While the lawn seats are required to be secured, they are not fixed to the surface on which they sit. However, the nature of the event is such that the number of seats provided in each section is the maximum probable population of that space.

6) There are some prescriptive code requirements that cannot be met for reasons of security, constructability, etc. These deficiencies are addressed in Section III of this Life Safety Evaluation along with mitigating features that are necessary to mitigate life safety risks and threats.

D. Scope of Services

The Protection Engineering Group, PC, under the direction of the SmithGroup, has been retained by the AOC to perform the following scope of services:

1) Perform three egress studies for the Presidential Stand and for the Audience viewing areas. Each study will include a site egress plan and a report. The AOC will review and comment before the next study may begin.

2) Provide a written Life Safety Evaluation in accordance with NFPA 101 12.1.7.3.

E. Conduct of Study

A kick-off meeting was held at the Ford House Office Building on October 20, 2005. The attendees at the meeting included Howard Wagner (Project Manager for AOC), various AOC representatives, Kevin Baur of SmithGroup, and Mike Thompson and Julie Zalinski of The Protection Engineering Group. Mike Thompson and Julie Zalinski were responsible for identifying egress deficiencies associated with the 2005 Presidential Inaugural, summarizing the applicable code requirements, and preparing this Life Safety Evaluation. Bob Anderson, Project Manager for the SmithGroup, was responsible for re-designing the event seating and exiting arrangements based on input from The Protection Engineering Group and preparing the design concept presented in Tab 3 (Design Concept) of this report.

II. PRESCRIPTIVE CODE REQUIREMENTS

The following section summarizes the NFPA 101 prescriptive code requirements for means of egress. It is not intended to be a comprehensive listing of all requirements, therefore, as the design of the 2009 Inaugural proceeds, the design team must ensure that the construction of the Inaugural facilities and structures as well as lawn seating and standing areas reflects the code requirements for access, egress, and construction. Compliance with these prescriptive requirements is important since a reduced egress capacity system has been utilized in this design concept for the 2009 Inaugural. The reduced egress capacity system is permitted by NFPA 101 but must be supported by a Life Safety Evaluation. Failure to meet the prescriptive requirements of NFPA 101, or the alternative means and methods developed for those issues that could not meet prescriptive requirements as provided in Section III of this Life Safety Evaluation, may result in an invalid Life Safety Evaluation.

A. General

NFPA 101, Chapter 12, New Assembly Occupancies, applies to 1) new buildings or portions thereof used as an assembly occupancy, 2) additions made to, or used as, an assembly occupancy, 3) alterations, modernizations, or renovations of existing assembly occupancies, or 4) existing buildings or portions thereof upon change of occupancy to an assembly occupancy. Since the Presidential Inaugural is outdoors, Chapter 12 does not directly apply to the event. However, the intent of Chapter 12 can be applied to these spaces to ensure that event occupants are provided the same level of life safety, if not a better level of life safety, than those occupants within an indoor assembly occupancy.

B. Smoke-Protected Assembly Seating

Chapter 12 has provisions for assembly occupancies that are considered smoke-protected. NFPA 101 12.4.2.1 considers a facility to be "smoke-protected" where:

1) All enclosed areas with wall and ceilings in a building or structure are protected with an approved supervised automatic sprinkler system; and

2) All means of egress serving a smoke-protected assembly seating area are provided with smoke-actuated ventilation facilities or natural ventilation designed to maintain the level of smoke at not less than 72 inches above the floor of the means of egress.

Generally, the egress requirements (i.e, egress capacity factors) for smoke-protected assembly seating are less stringent than those required for non-smoke-protected areas. Since smoke accumulation would be expected to take longer in a smoke-protected space as opposed to a non-protected smoke space, smaller widths for aisles and other egress components are permitted. It is reasonable to assume that smoke accumulation throughout the majority of the Presidential Stand, seating areas, and standing areas would not occur since the event is outdoors. The only places that smoke accumulation would be expected to occur is under grandstands or under fixed structures. NFPA 101 further supports this idea by permitting the use of smoke-protected egress provisions for outdoor assemblies. Therefore, the smoke-protected requirements provided in Chapter 12 are applied in this Life Safety Evaluation.

C. Life Safety Evaluation

NFPA 101 12.1.7.3 requires that a Life Safety Evaluation be performed where the occupant load of an assembly occupancy exceeds 6,000. Furthermore, to utilize the means of egress provisions for smoke-protected assembly seating, NFPA 101 12.4.2.2 also requires that a Life Safety Evaluation be performed.

D. Occupant Loads (12.1.7.1)

1) The occupant load in seating areas on the stage, grandstands, and audience seating areas is based upon the number of seats.

2) Areas $\leq$10,000 square feet, occupant load cannot exceed 1 person in 5 square feet.

3) Areas >10,000 square feet, occupant load cannot exceed 1 person in 7 square feet.

E. Egress Components

Doors (12.2.2.2)

1) Doors shall comply with 7.2.1.

2) For doors serving an occupant load of 100 or more: Provide panic/fire exit hardware where locks and latches are present except for delayed egress lock and access-controlled egress doors.

3) Doors shall swing in the direction of egress travel where serving an area with an occupant load of 50 or more (7.2.1.4.2).

4) Doors shall be arranged to be opened readily from the egress side whenever the building is occupied. Locks, if provided, shall not require the use of a key, a tool, or special knowledge or effort for operation from the egress side (7.2.1.5.1 and 7.2.1.5.2).

5) Turnstiles or other devices that restrict the movement of persons are permitted in assembly occupancies as long as they do not interfere with the required means of egress facilities.

Stairs (12.2.2.3)

1) Stairs shall comply with 7.2.2.

2) New stairs and ramps shall have handrails on both sides (7.2.2.4.1.1).

3) Existing stairs and ramps are permitted to have a handrail on one side only (7.2.2.4.1.6).

Ramps (12.2.2.6)

1) Ramps shall comply with 7.2.5.

2) Ramps not part of an accessible means of egress and serving only stage or nonpublic areas are permitted to have slopes not steeper than 1 in 8.

3) Ramped aisles not part of an accessible means of egress are permitted to have a slope not steeper than 1 in 8.

Aisle Accessways (12.2.5.5)

1) Clear width for aisle accessway with aisle or door at both ends of row: 12 inches plus 0.3 inches for every additional seat beyond the number stipulated in the table below.

Clear width of aisle accessway with aisle or door at one end of row: 12 inches plus 0.6 inches for every additional seat beyond the number stipulated in the table below.

Total number of seats in the space	Number of seats per row permitted to have a clear width aisle accessway of not less than 12 inches	
	Aisle or door at both ends of row	Aisle or door at one end of row
<4,000	14	7
4,000-6,999	15	7
7,000-9,999	16	8
10,000-12,999	17	8
13,000-15,999	18	9
16,000-18,999	19	9
19,000-21,999	20	10
≥22,000	21	11

2) Minimum clear width is not required to exceed 22 inches.

3) Where used by no more than 4 persons, no minimum clear width required for portion of aisle accessways having a length not exceeding 72 inches measured from the center of the seat farthest from the aisle.

4) Maximum number of seats per row: 100 (served by aisles or doors at both ends)

5) Depth of seat boards: ≥9 inches where the same level is not used for both seat boards and footboards.

6) Footboards independent of seat boards, shall be provided so that there is no horizontal opening that allows the passage of a ½ inch diameter sphere.

Aisles (12.2.5.6.3)

1) Aisles must be provided so that the number of seats served by the nearest aisle is in accordance with the descriptions for aisle accessways. Aisles are not required in bleachers. The minimum clear width of an aisle is required to be sufficient to provide egress capacity but cannot be less than the following:

   a. Stairs with seating on each side: 48 inches

   b. Aisle stair serving ≤50 seats: 36 inches

   c. Stairs with seating on one side: 36 inches

   d. Between handrail and seating: 23 inches

   e. Between guardrail and seating where handrail divides aisle: 23 inches

   f. Level or ramped aisles with seating on both sides: 42 inches

   g. Level aisle serving ≤50 seats: 36 inches

   h. Level or ramped aisles with seating on one side: 36 inches

   i. Between a handrail/guardrail and seating where aisle serves ≤5 rows on one side: 23 inches

Aisle Stairs and Ramps (12.2.5.6.4)

1) Ramps required where aisle has gradient steeper than 1 in 20 but not steeper than 1 in 8.

2) Stairs are required where aisle has a gradient steeper than 1 in 8.

3) Marking stripe required for aisle stairs.

4) Aisles in folding and telescopic seating are permitted to be stepped aisles.

5) Height between landings does not apply to aisle stairs.

Aisle Stair Treads (12.2.5.6.5)

1) Variations in the depth of adjacent treads: ≤ 3/16 inch.

2) Treads: ≥11 inches.

3) All treads must extend the full width of the aisle.

Aisle Stair Risers (12.2.5.6.6)

1) Riser height: ≥4 inches and ≤8 inches.

2) Folding and telescopic seating risers: ≥3 ½ inches and ≤11 inches.

3) Riser height where aisle gradient is steeper than 8 inches in rise and 11 inches of run: ≤9 inches.

4) Riser height must be uniform in each aisle.

5) Construction-caused nonuniformities: ≤3/16 inches between adjacent risers. For purposes of accommodating changes in gradient necessary to maintain sight lines within a seating area, riser height can exceed 3/16 inches in any flight provided the exact location is provided a marking stripe on each tread at the nosing or leading edge adjacent to the nonuniform riser.

Aisle Handrails (12.2.5.6.7)

1) Ramped aisles with gradient greater than 1 in 20 must have handrails at one side or along the centerline.

2) Aisle stairs must have handrails at one side or along the centerline.

3) Handrails must be installed ≥34 and ≤38 inches above the surface tread.

4) Handrail clearance between handrail and the wall to which it is fastened must be ≥2 ¼ inch.

5) Handrails circular cross section of an outside diameter must be ≥1 ¼ inch and < 2 inches

6) Handrail cross section with shape that is other than circular with a perimeter dimension must be ≥4 and ≤6 ¼ inches, with the largest cross sectional dimension ≤2 ¼ inch provided that the graspable edges are rounded so as to provide a radius ≥1/8 inch.

7) Handrails must be noncontinuous with gaps or breaks at intervals not exceeding five rows where seating on both sides of the aisle.

8) Clear width of handrail gaps and breaks: ≥22 inches and ≤36 inches, measured horizontally, and the handrails shall have rounded terminations or bends.

9) Additional intermediate rails approximately 12 inches below the main handrail are required where handrails are the middle of aisle stairs.

10) Handrails are not required for ramped aisles having a gradient not steeper than 1 in 8 and having seating on both sides where the aisle does not serve as an accessible route.

11) The requirement for a handrail shall be satisfied by the use of a guard provided with a rail that complies with the handrail graspability requirements and has a consistent height between 34 inches and 42 inches measured either vertically from top of rail to the leading edge of stair tread OR vertically from top of rail to the adjacent walking surface in the case of a ramp.

Aisle Marking (12.2.5.6.8)

1) Provide marking stripe on each tread at nosing or leading edge so tread is readily apparent.

2) Marking stripe width: ≥1 inch and ≤ 2 inches.

3) Not required where tread surfaces and environmental conditions under all conditions of use are such that the location of each tread is readily apparent.

Access and Egress Routes (12.2.5.4)

1) Maintain and clear access and egress routes so that crowd management is able to reach any individual at any time without undue hindrance.

2) Maintain and clear access and egress routes so that an individual is able to move without undue hindrance to exits.

3) Where aisle accessways and aisles converge to form a single path of egress travel, required egress capacity of that path must not be less than the combined required capacity of the converging aisle accessways and aisles.

4) Portions of aisle accessways and aisles where egress is possible in either of two directions must be uniform in required width (only for portions of aisle accessways where the required width not including the seat space exceeds 12 inches).

F. Number of Exits (12.2.4.4)

1) For fenced outdoor assembly occupancies:

a. Occupant load $\leq$ 6,000: not less than two widely separated means of egress

b. Occupant load > 6,000: not less than three widely separated means of egress.

c. Occupant load > 9,000: not less than four widely separated means of egress.

G. Exit Capacity (12.4.2.3)

1) Capacity Factors: The number of seats specified shall be within a single assembly space and interpolation shall be permitted between the specific values shown. Single seating space is permitted to have multiple levels, floors or mezzanines.

No. of Seats	Clear Width per Seat Served	
	Stairs (inches)	Doors (inches)
2,000	0.30 AB	0.22 C
5,000	0.20 AB	0.15 C
10,000	0.13 AB	0.10 C
15,000	0.096 AB	0.07 C
20,000	0.076 AB	0.056 C
≥25,000	0.06 AB	0.044 C

If risers exceed 7 inches in height, stair width in table below is multiplied by factor A, where A equals:

$$A = 1 + (\text{riser height} - 7/5)$$

Stairs not having a handrail within 30 inches horizontal distance shall be 25 percent wider than otherwise calculated and width shall be multiplied by factor B, where B equals:

$$B = 1.25$$

Ramps steeper than 1 in 10 slope where used in ascent can have their width increased by 10 percent and width can be multiplied by factor C, where C equals:

$$C = 1.10$$

Note: For purposes of this evaluation, the capacity factor for ≥25,000 seats is applied to the aisles and other egress components throughout the space. In addition, risers do not exceed 7 inches in height and ramps are not steeper than 1 in 10. In cases where handrails are not within 30 inches, the capacities are based on the 25 percent adjustment factor noted above.

2) Main Entrance/Exit: Where there is no well-defined main entrance/exit, exits are permitted to be distributed around the perimeter, provided that the total exit width furnishes not less than 100 percent of the width needed to accommodate the permitted occupant load. Exits shall be located as far apart as practicable. Exits shall be accessible from a cross aisle or a side aisle (12.2.3).

H. Arrangement of Means of Egress (12.4.2)

1) Common path of travel from any seat to a point where a person has a choice of two directions of egress travel: 50 feet.

2) Dead ends in aisle stairs are not permitted to exceed a distance of 21 rows unless the seats served by the dead end aisle are not more than 40 seats from another aisle. The 40-seat distance is measured along a row of seats having an aisle accessway with a clear width ≥ 12 inches plus 0.3 inches for each additional seat above 7 in the row.

3) No travel distance requirements for outdoor assembly seating facilities of Type I or Type II construction, where all portions of the means of egress are essentially open to the outside.

I. Stage Construction (12.4.5)

1) Regular stages are required to meet the following requirements for construction.

a. Must be constructed of materials required for the type of building construction in which the stage is located (US Capitol is Type IB, noncombustible).

b. The finish floor is permitted to be of wood.

c. Openings through stage floors must be equipped with tight-fitting traps with approved safety locks, and such traps must be of wood having an actual thickness ≥ 1 ½ inch or of material that provides fire and heat resistance at least equivalent to that provided by wood traps having an actual thickness ≥ 1 ½ inch.

d. Accessory rooms contiguous to the stage must be separated from each other and other building areas by 1-hour fire rated constructed and protected openings. Separation requirements do not apply where the stage floor area does not exceed 1,000 square feet or where rooms are not contiguous to the stage.

J. Grandstands (12.4.8)

1) Definition: A grandstand is structure that provides tiered or stepped

seating. A bleacher is a grandstand in which the seats are not provided with backrests.

2) Wood Grandstand Requirements

a. The distance between an outdoor wood grandstand and a building cannot be less than two-thirds of the grandstand height and in no case less than 120 inches of a building, unless otherwise permitted by the following:

The distance requirement does not apply to buildings of not less than 1-hour fire resistance-rated construction with openings protected against the fire exposure hazard created by the grandstand.

The distance requirement does not apply where a wall of not less than 1-hour fire resistance-rated construction separates the grandstand from the building.

b. An outdoor wood grandstand unit shall not exceed 10,000 square feet in ground area or 200 feet in length and the following are also required:

Grandstand units of the maximum size are required to be placed not less than 240 inches apart or separated by walls of 1-hour fire resistance rating.

The number of grandstand units erected in any one group cannot exceed three.

Each group of grandstand units is required to be separated from any other group by a wall of 2-hour fire resistance-rated construction extending 24 inches above the seat platforms or by an open space of not less than 50 feet.

The ground area or length can be doubled where the grandstand is constructed entirely of labeled fire-retardant-treated wood (FRTW) that has passed the standard rain test, ASTM D 2898, *Test Method for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing*, or where the grandstand is constructed of

members conforming to dimensions for heavy timber construction (Type IV (2HH))

c. The highest level of seat platforms above the ground or the surface at the front of any wood grandstand shall not exceed 20 feet. The height requirements specified above for wood grandstands can be doubled where constructed entirely of labeled FRTW that has passed the standard rain test, ASTM D 2898, *Test Method for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing*, or where constructed of members conforming to dimensions for heavy timber construction (Type IV (2HH)).

3) General Grandstand Requirements

a. The depth of footboards and seat boards in grandstands: ≥9 inches

b. Where the same level is not used for both seat foundation and footrests, provide footrests independent of seats.

c. Seats and footrests must be supported securely and fastened in such a manner that they cannot be displaced inadvertently.

d. Individual seats or chairs are permitted only if secured in rows in an approved manner, unless seats do not exceed 16 in number and are located on level floors and within rail-in enclosures, such as boxes.

e. Maximum number of seats permitted between the farthest seat and an aisle is shown in table below.

Application	Outdoors
Grandstand	11
Bleachers	20

4) Portable Grandstand Requirements

a. They are required to be self-contained and shall have within them all necessary parts to withstand and restrain all forces that might be developed during human occupancy.

They must be designed and manufactured so that if any structural members essential to the strength and stability of the structure have been omitted during erection, the presence of unused connection fittings will make the omissions self-evident.

They must be provided with base plates, sills, floor runners, or sleepers of such area that the permitted bearing capacity of the supporting material is not exceeded.

Where it rests directly on a base of such character that it is incapable of supporting the load without appreciable settlement, mud sills of suitable materials having sufficient area to prevent undue or dangerous settlement must be installed under base plates, runners or sleepers.

All bearing surfaces must be in contact with each other.

b. Spaces under grandstands must be kept free of flammable or combustible materials unless protected by an approved sprinkler system. This requirement does not apply to:

Accessory uses of 300 square feet or less such as ticket booths, toilet facilities, or concession booths where constructed of noncombustible or fire rated construction.

Rooms that are enclosed in not less than 1-hour fire rated construction and are less than 1000 square feet.

c. Railings or guards are required along portions of the backs and ends of all grandstands where the seats are > 48 inches above the floor or ground. The railings or guards must be ≥42 inches above the aisle surface or footrest or ≥36 inches vertically above the center of the seat or seat board surface, whichever is adjacent.

d. Railings or guards are required where front footrest are > 24 inches above the floor. The railings or guards must be ≥33 inches above

such footrests. Such railings are permitted to be ≥26 inches high in grandstands or where the front row of seats includes backrests.

e. Railings or guards are required on cross aisles located within the seating area. Provide rails ≥26 inches high along the front edge of the cross aisle. Such railings are not required where the backs of seats in front of the cross aisle project ≥24 inches above the surface of the cross aisle.

f. Vertical openings between guardrails and footboards or seat boards must be provided with intermediate construction so that a 4-inch diameter sphere cannot pass through the opening.

g. Openings between the seat board and footboard located > 30 inches above grade must be provided with intermediate construction so that a 4-inch diameter sphere cannot pass through the opening.

K. Crowd Managers (12.7.5)

1) In assembly occupancies having occupant loads exceeding 1,000, trained crowd managers or crowd manager supervisors must be provided at a ratio of 1 crowd manager /supervisor for every 250 occupants.

L. Seating (12.7.8 and 12.7.9)

1) Seats in assembly occupancies accommodating more than 200 persons must be securely fastened to the floor except where fastened together in groups of not less than three and not exceeding seven.

2) All seats in balconies and galleries shall be securely fastened to the floor.

3) Seats not secured to the floor are permitted where fastening seats to the floor might be impracticable. Unsecured seats are permitted where fastening seats to the floor is impracticable. Unsecured seats are permitted provided that in the area used for seating, excluding such areas as dance floors and stages, there is not more than one seat for each 15 square foot of net floor area and adequate aisles to reach exits are maintained at all times.

III. LIFE SAFETY FACTORS

The purpose of a Life Safety Evaluation is to evaluate the life safety hazards that might occur during the Presidential Inaugural so that control measures can be provided to ensure that occupants evacuating the area will not be endangered by conditions developing faster

than the time required to clear the means of egress. The following section summarizes features of the outdoor assembly event that could have an impact on life safety and addresses measures that are necessary to mitigate life safety risks and threats. Furthermore, this section is intended to support the use smoke-protected assembly seating capacity factors used in occupant load calculations. This evaluation is based upon the 2009 Inaugural design concept provided in Tab 3 (Design Concept).

A. Nature of the Events Being Accommodated

1) Event Purpose

This event is held solely for the Presidential Inaugural, which occurs every four years on the West Front of the US Capitol on January 21st.

2) Event Management and Security

The Presidential Inaugural is like no other event in the United States with respect to security, communication, crowd control, and emergency response. Before, during and after the event, the assembly space is heavily populated with US Capitol Police stationed at every ingress and egress point as well as throughout the crowds. In addition to the US Capitol Police, event management, security, and emergency response is handled by military ushers, the District of Columbia Fire Department, Homeland Security representatives, and numerous other emergency response personnel. For purposes of this evaluation, these entities together are herein referred to as "crowd management personnel." Even though NFPA 101 acknowledges a ratio of 1 crowd manager to every 250 occupants, this event far exceeds this requirement by providing closer to 1 crowd manager to every 30 occupants.

3) Site Access: Ingress and Egress Patterns

Generally, the ingress and egress patterns on the Presidential Stand and in the audience seating and standing areas are limited for security reasons; however, the egress patterns in both locations equal or exceed minimum requirements of NFPA 101. For purposes of this section, the ingress and egress patterns are divided into the Presidential Stand and the audience seating and standing areas.

Presidential Stand

Each Inaugural requires the construction of a temporary stage and temporary grandstands to be built upon the US Capitol West Front Central

Plaza, Excedra, Middle and Main Terrace Levels and the Grand Stairs. The President and his party are seated on a temporary stage built within the Excedra and above the plaza foundation. Congress and Honored Guests area seated behind the Excedra on temporary grandstands built upon the Middle Terrace and Grand Stairs. Diplomats and Honored Guests sit upon grandstands located behind the President and Congress. Media stands are multi-tiered and located on the Grand Stairs and Plaza. Bleachers on the Main Terrace, above and behind Congress, are used to seat Choir and Herald Trumpeters and Band and Honor Guard are located on the Plaza in front of the President's Stand. A Television and Still Photography Structure is located on the Plaza to record the ceremony.

Access to the Presidential Stand is primarily from the US Capitol. The President, his party, and Honored Guests enter the Presidential Stand from the Middle Terrace Level. Congress and Diplomats access the Presidential Stand from the Main Terrace Level.

Due to security reasons, movement on the Presidential Stand during the ceremony is significantly restricted. As a matter of fact, no occupants on the Presidential Stand are permitted to stand until the President has evacuated the stage. Following the ceremony, the majority of attendees on the Presidential Stand exit via the Grand Stairs to the Lower Terrace or up the grandstand ramps to the Upper Terrace of the US Capitol Building and exit to the North and South of the building. Only the President and some select individuals exit into the US Capitol.

Audience Areas

The general public and other VIP guests are located in seating and standing areas on the West Front grounds. The seating areas are divided into sections located on the Lower Terrace Level and in the grass of the West Front. The standing areas are located behind the seating areas.

The public accesses the West Front of the US Capitol via four secured entrances: one on Independence Avenue, one on Constitution Avenue, and two entrances to the West of the standing areas. Public access to the seating and standing areas is enabled by prefabricated ramps, stairs, platforms, and pedestrian bridges. Site appurtenances and security barriers are placed at strategic locations throughout the Capitol Grounds to direct attendees to their designated seating/standing sections and to keep attendees from entering restricted areas.

As with the Presidential Stand, movement during the ceremony is significantly restricted due to security measures. At the end of the ceremony, attendees exit in a simplistic manner, fanning out from the seating areas in North, South, and West directions

4) Seating Policies and Practices

The seating policies and practices during the event are very organized and structured. For purposes of this section, the policies and practices are divided into the Presidential Stand and the audience seating and standing areas.

Presidential Stand

The occupants sitting on the Presidential Stands access the stands either via the US Capitol or via the same entrances available to the general public. These occupants are typically members of Congress or special guests that also must pass through security check points. Stepped seating on the Presidential Stand is grandstand seating in accordance with NFPA 101.

Audience Seating and Standing Areas

The event is a ticketed event in which occupants must show their tickets prior to entering the secured area on the West Front. Once through the ticket line, each occupant passes through security check points at one of four entrances. The occupants are then directed to their respective sections based on the color of their tickets and their seating/standing section number. Once the occupant is in his/her respective section, the seats and standing areas are available on a first-come, first-serve basis. In the seating areas, there are several rows throughout that are cordoned off for special guests. The seats in the lawn areas are standard plastic folding chairs that are wire-tied together to keep them secure. In past events, the plastic chairs have been fastened together in groups larger than required by NFPA 101. This evaluation is based on chairs that are secured in accordance with NFPA 101.

5) Emotional Qualities

The majority of the event attendees have been invited to the ceremony; however, due to the political nature of the event, there is the possibility of some event attendees to make political statements. However, it is

anticipated that such disturbances will have only a local disturbance, which will be quickly contained by crowd management personnel.

6) Time of Day when Event is Held

This event is held at mid-day on January 21st during daylight hours.

7) Time Duration of Single Event

The entire event generally lasts for approximately four hours, with ingress of event attendees taking approximately two hours, the ceremony lasting approximately one hour, and clearing of the site lasting approximately one hour. Egress of the space occurs rapidly so that the US Capitol Grounds can be secured again prior to the departure of the new President.

B. Occupant Characteristics and Behavior

1) Homogeneity

The demographics of the Presidential Inaugural attendees is typical of the demographics of the general adult population.

2) Cohesiveness

Due to the strict security measures in place at this event, the crowds are very cohesive in nature as there are very defined paths of ingress and egress that are permitted. Even during exiting, the occupants egress in a cohesive manner as directed by crowd management personnel.

3) Familiarity with Area

Due to the strict security measures and the high level of crowd management, familiarity with the area is not considered a significant impact to life safety. For purposes of this section, this discussion is divided into the Presidential Stand and the audience seating and standing areas.

Presidential Stand: Since the majority of occupants on the Presidential Stands are members of Congress, they will be very familiar with the area since they work there.

Audience Seating and Standing Areas: Since the US Capitol is a focal point of the United States, it is likely that many of the event attendees have

been to visit the Capitol or are at least familiar with the building and its grounds. For those that are visiting the grounds/event for the first time, the ability to visually view the entire area and the significant number of crowd management personnel reduce the impact of unfamiliarity.

4) Familiarity with Similar Events

Since there is no other event such as this in the United States, the occupants familiarity with the event is based upon whether or not they have been to a previous Presidential Inaugural. Furthermore, the event itself is a relatively simplistic production that does include theatrics or other complicated presentation. As such, familiarity with the event is not considered an impact to life safety.

5) Occupant Capability

The demographics of this event are typical of the demographics of the general adult population. Therefore, access and egress for disabled attendees is provided. The crowd management personnel at the event also provide further assistance for those that may not have full capability to exit on their own.

6) Socioeconomic Factors

The socioeconomic factors are not anticipated to have any impact on life safety of the event attendees.

7) Small Minority Involved with Recreational Violence/Emotional Involvement

Recreational violence is not anticipated at this event. However, there is the potential for event attendees to create local disturbances. Past history has demonstrated that such events are quickly managed and resolved. It is anticipated that such disturbances will have no impact on life safety.

8) Use of Alcohol or Drugs

The use of alcohol or drugs at this event is not anticipated to have any impact on the life safety of event attendees. In fact, food and beverage sales are not provided.

9) Food Consumption/Washroom Utilization

There are no service facilities associated with this event other than portable toilets that are located in dedicated areas off north and south sidewalks. These restrooms are not anticipated to have any impact on the life safety of event attendees.

C. Management

1) Event Planner Coordination

The Presidential Inaugural is a Federal government sponsored and operated event. There are numerous entities that are responsible for implementing the Presidential Inaugural ceremony and crowd management. The planning process for each Inaugural begins at the completion of the previous ceremony where the stakeholders meet to critique the previous ceremony and develop recommendations for inclusions into the next Inaugural. The key players in the event planning include the Senate Committee on Rules, the Joint Committee on Inaugural Ceremony, the AOC, the Capitol Superintendent and design disciplines, the Senate and House Sergeant at Arms including the US Capitol Police, and the Secret Service. Crowd management is headed up by the US Capitol Police and includes personnel from various entities including the military, District of Columbia Fire Department, Homeland Security, and various emergency response organizations. The coordination between the event planners and the crowd management personnel is extremely structured and well orchestrated.

2) Experience with the Area, Event, and Attendees

Since this event occurs every four years at the same location, those involved in planning the event and managing the crowds are intimately familiar with the US Capitol grounds, the event attendees and the Inaugural event itself. There is a distinct chain of command that is followed closely.

3) Thorough Up-to-Date Operation Manual

An operation manual is developed every four years for each Inaugural based on the operation manuals developed for the previous Inaugural. Therefore, the operation manual and implementation procedures are comprehensive and up-to-date.

4) Training of Personnel

Individuals responsible for implementing the event and providing crowd management are highly trained individuals and, as a group, are effective in ensuring that the event proceeds while providing a safe environment for event attendees. In the days leading up to the event, crowd management personnel, including the US Capitol Police and other military and law enforcement agencies, have multiple walk-throughs of the event. There is then a briefing for all agencies by the Armed Forces Inaugural Committee and a final dress rehearsal is performed just before the event. US Capitol Police and other law enforcement personnel are located throughout the stands and the grounds. They are dispersed throughout for crowd control and for mitigation of events. In addition to the specific training for the Inaugural event, the US Capitol Police have been undergoing mass evacuation drills for the last four years so they have a strong level of reinforced training in crowd movement and management. All law enforcement agencies present during the event communicate via the Capitol Police Joint Command Center.

5) Supervision of Personnel

Due to the military style of operation at this event, there is a distinct chain of command that is followed closely.

6) Communication Systems and Utilization

This event includes a secured command center and dedicated radio/telephone communication systems that are coordinated to provide a communication between the key players implementing the event and crowd management including the US Capitol Police, District of Columbia Fire Department, the military, Homeland Security, and other event management.

7) Ratio of Management and Other Personnel to Attendees

NFPA 101 requires that the ratio of management to event attendees be 1 crowd manager for every 250 attendees. This event exceeds this ratio requirement by providing approximately 1 crowd manager for every 30 attendees.

8) Location/Distribution of Personnel

The US Capitol Police, military ushers, Homeland Security and various emergency response personnel are located throughout the US Capitol Grounds including all ingress and egress points, in seating areas, in standing areas and at other strategic locations. The DC Fire Department is also located in four strategic locations throughout the event. These personnel are available to direct occupants to seating sections, to assist in calming disturbances, to aid in exiting when the event is complete, and to provide medical and other emergency assistance.

9) Central Command Location

This event is served by a dedicated secured central command center.

10) Rapport Between Event Planners, Crowd Management and Attendees

Due to the nature of the event, it is anticipated that a good rapport exists between all entities involved.

D. Emergency Management Preparedness

1) Complete Range of Emergencies Addressed in Operation Manual

Due to the nature of the event, all possible emergency events have been identified and addressed by event management. In developing the seating plans, these emergencies have been taken into account. In the event of an incident, the US Capitol Police identify the emergency and the command center immediately develops the appropriate response based on the situation at hand. The crowd personnel in the vicinity of the incident implement the "situation-based" response.

2) Power Loss

Since communication is primarily made via radios and the event occurs in daylight hours, power loss is not anticipated to have an impact on life safety. Communication systems are provided with a back-up power source (i.e., redundant generators).

3) Fire

Since the event occurs outdoors, the impact of fire is not as significant as if it was inside a building. As an outdoor space, the amount of

combustibles expected is limited and any smoke production would not be expected to impact event attendees. Furthermore, the seating and standing areas are located in a secured area, thereby reducing the potential for attendees to bring in flammable liquids. The plastic chairs present in the seating areas are not considered to be a significant threat from a fire perspective and neither is clothing on event attendees. Any fire incident (i.e., electrical fire) that did occur is expected to be detected rapidly by the large number of attendees and support personnel in the area. In addition, the evacuation of the immediate area would be expected to occur in less time than the time it would take for untenable conditions (i.e., exposure to heat) to arise.

The safe rooms under the stage are not considered to be a threat to life safety since these rooms are constantly supervised by trained personnel.

One fire threat that is of concern is the storage of combustible materials under the grandstands. It was reported that in previous Inaugurals, cardboard boxes were stored in the areas under the grandstand. This practice is a fire hazard and is not in compliance with NFPA 101, therefore, all storage of combustible materials under the grandstands will be relocated during future Inaugurals.

4) Severe Weather

Severe weather is not considered an issue in this evaluation based on the time of year this event is held. If snow or extreme cold occurs, as demonstrated by a some past Inaugurals, the event will be held elsewhere.

5) Earthquake

When designing for earthquake protection, the IBC requires that structures be assigned to a seismic design category based on their seismic use group and the design spectral response acceleration coefficient. Based on the geographic location and the nature of this event, the Inaugural Stands are considered a Seismic Use Group II (where failure of the structure would result in substantial public hazard) and a Seismic Design Category B (based on spectral response acceleration coefficients identified in the IBC). IBC 1616.6 requires that a structural analysis, based on Seismic Design Category B, be performed prior to constructing the Inaugural Stand. Given this information, an earthquake occurrence during the inauguration would not be expected to have an impact on life safety of the event attendees

since the Inaugural Stand is required to be constructed in accordance with the above referenced earthquake provisions of the IBC.

6) Crowd Incident

The only crowd incidents anticipated would be local disturbances by event attendees wishing to make political statements. It is expected that crowd management personnel will immediately contain such incidents so as not to threaten the life safety of event attendees. People not attending the ceremony but involved in protests and the like outside the secured area could affect the egress path of event attendees. However, since such protests would occur remote from the event, the impact would not be considered a significant to life safety for event attendees.

7) Terrorism

The potential for explosions are excluded from this evaluation since security check points eliminates the potential for explosive devices to be brought within the secure perimeter. If an explosion occurred outside the secured perimeter, it is expected that it would be at such a distance that evacuation of event attendees would be manageable by crowd management personnel.

8) Hazardous Material

For purposes of this evaluation, hazardous material incidents are addressed under the auspices of the US Capitol Police.

9) Transportation Accident

Due to heightened air space restrictions around Washington, DC, during the event, it is not likely that any air space violation would occur during the Inaugural. Furthermore, all train traffic in the area is suspended during the event, therefore, an incident involving trains would not be expected. Due to the location of the event and the distance from any active streets, an automobile accident would not be expected to have an impact on occupant safety since it would remote from the secured area.

10) Communications System Available

This event is served by a dedicated radio/telephone system that provides communication between the command center and event management personnel.

11) Personnel and Emergency Forces Ready to Respond

The crowd management personnel inside and outside the secured area are highly trained individuals that are appropriately prepared for all possible emergencies and are ready to respond on command.

12) Attendees Clearly Informed of Situation and Proper Behavior

The extensive crowd management in the assembly spaces is available to clearly inform event attendees of ingress, egress, and unexpected incidents Due to the high ratio of crowd management personnel to event attendees, it is anticipated that communication between the two groups is clear and concise.

E. Building Systems

1) Structural Integrity

The Inaugural Stand and all supporting facilities will be constructed in accordance with applicable buildings codes and will be designed to support the anticipated occupant loading. Therefore, structural integrity is not anticipated to have an impact on life safety.

2) Fire Protection and Prevention

Since the event is an outdoor event, traditional fire protection systems are not considered an issue in this evaluation. On the other hand, fire prevention is important to ensure that the life safety of event attendees is not threatened. However, the large crowds and the extensive staffing associated with the event essentially provide a continuous fire watch thereby reducing the threat of fire to event attendees. Furthermore, the DC Fire Department is provided in four strategic locations throughout the event.

3) Compartmentation

As an outdoor event, compartmentation is not considered in this evaluation

4) Automatic Detection and Suppression of Fire/Smoke Control

As an outdoor event, fire protection systems are not required nor provided.

5) Alarm and Communications System

As an outdoor event, fire alarm systems are not required nor provided. A secured command center serves this event and provides required communication for event management.

6) Fire Department Access Routes and Response Capability

The District of Columbia Fire Department is located inside and outside the secured areas at four strategic locations. In addition, various other emergency response teams are available for medical assistance. The firefighting and medical capabilities of emergency response personnel are excellent and they have access to all areas of the event as needed.

7) Weather Protection

Unusually high winds, such as those experienced in a hurricane or tornado, are not anticipated at the event based on the time of year it occurs. Nonetheless, all towers and systems are designed to withstand wind speeds required by the building code.

As an outdoor event, there is no shelter provided for event attendees should it rain or snow. It is anticipated that wet conditions would slow egress of attendees; however, stairs and hard walking surfaces are designed for exterior egress in accordance with NFPA 101. Furthermore, egress aisles in standing areas are mulched to provide, not only a distinct egress path, but also, under wet conditions, to provide a slip resistant walking surface.

Other severe weather such as lightning is not anticipated based on the time of year this event is held.

8) Circulation Systems

Due to strict security measures, the circulation throughout the secured area is restricted. While occupants are limited to ingress and egress from their specific areas, the amount of circulation provided adequately accommodates the occupants being served. Furthermore, the number of seats in rows in the audience seating areas is far less than that which is permitted by NFPA 101 between the cross aisles, thereby reducing the paths that must be traveled before merging with a cross aisle.

The aisles provided have been sized so that they meet NFPA 101 requirements for convergence. In many cases, the aisle widths are larger than that required by the code. In addition, since the simplistic egress pattern is to fan out occupants from seating areas away from the US Capitol, no cross flows or counterflows are expected during egress.

While all exits and egress components have been sized to accommodate the occupant loads being served, queuing during egress is anticipated. However, the extent of queuing is not anticipated to be any more than the standard egress queuing expected at stair entrances and egress gates/doors.

9) Control Possibilities, Including Metering

The egress paths are clear and unobstructed. Turnstiles and other operating devices in the means of egress that restrict the flow of occupants do not exist in the assembly space.

10) Hazard Development and Evacuation Times

Evacuation modeling was performed for the audience viewing areas and the Presidential Stand. This modeling was performed using a computer model called EVACNET4. The results of this model provide the minimum amount of time required to evacuate the two spaces as it does not take into account notification time and time delays for occupant evacuation. Furthermore, NFPA 101 suggests that the Life Safety Evaluation include a factor of safety of not less than 2.0 in all calculations relating to required egress time. Based on this, the following evacuation times were established.

Space	Time to Evacuate (with 100% Safety Factor)
Audience Seating and Standing Areas	46 minutes
Presidential Stand	12 minutes

As for hazard development time, it is not likely that any potential hazard discussed in Section D would develop at such a rate that evacuation of the event attendees would be hindered. This conclusion is based on the extensive crowd management and emergency preparedness at this event as

well as the code compliant egress path and patterns provided, which in some cases exceed that which is required by the code.

11) Route Quality

Since this is an outdoor event, the route quality is anticipated to be good. The large open spaces provides a good visual of ingress and egress patterns.

12) Walking Surface

Level walkways in seating and standing areas in the West Front lawn are on grass and mulch surfaces. It is expected that egress speed may be slowed by this type of walking surface by the paths are kept clear and free of obstructions such as snow and ice accumulation therefore the walking surfaces are not anticipated to have any threat to life safety.

Stairs in the seating and standing areas and in the Presidential Stand are treated as exterior stairs in accordance with NFPA 101 and therefore do not pose a threat to life safety.

13) Appropriate Width and Boundary Conditions

The width of means of egress components meet the requirements of NFPA 101. Egress widths have been sized to accommodate the number of occupants served. Since the egress widths meet the width and dimensional requirements of NFPA 101, there is no need to increase the egress paths above what is already required by code.

14) Ramp Slopes

The slope of ramps can have an impact on egress; however, all ramps at the event are constructed in accordance with NFPA 101.

15) Step Geometries

The dimensions of stairs and steps can have an impact on egress; however, all stairs and steps at the event are constructed in accordance with NFPA 101. In many cases, the existing stairs and steps used are more egress friendly than that required by the code.

16) Perceptual Aspects

As an outdoor assembly space, the perceptual aspects are anticipated to be very clear especially since the event is held during the day and the event is highly orchestrated with crowd management personnel directing people to seats and exits.

17) Route Choices

The number of route choices available for event attendees in the Presidential Stand and audience seating and standing areas meet the requirements specified in NFPA 101. In some cases, the number of exits available exceeds that required by code. The route choices available are not anticipated to have an impact on life safety.

18) Resting/Waiting Areas

Since the event is an outdoor event, resting and waiting areas are not considered to be necessary since occupants can relocate themselves outside the effects of an incident with little effort.

19) Levels of Service (Overall Crowd Management Quality)

With over 50,000 attendees, the Presidential Inaugural is a large event. However, the amount of crowd management personnel exceeds that required by NFPA 101 (ratio of 1 crowd manager to 30 attendees vs 1 crowd manager for 250 attendees as required by NFPA 101). This results in a highly structured and well orchestrated management of the large crowd and therefore the levels of service expected are not anticipated to have an impact on means of egress.

20) Concessions/Services/Washroom Provisions

There are no service facilities associated with this event other than portable toilets that are located in dedicated areas off the north and south sidewalks. These restrooms are not anticipated to have any impact on the life safety of event attendees.

21) First Aid and EMS Facilities

Medical assistance is provided by the District of Columbia Fire Department, the US Capitol Police, military medics and other emergency response personnel that are strategically located throughout the assembly

area. Medical staff not only provide foot access to medical emergencies but also have motorized utility vehicles to respond to medical emergencies.

III. ALTERNATIVE MEANS AND METHODS

Based on the findings of an egress analysis of the 2005 Inaugural, a design concept has been prepared for the 2009 Inaugural that accommodates the 2005 Inaugural capacity while providing code compliant egress (Refer Tab 3, Design Concept). This Life Safety Evaluation has identified potential life safety hazards that could occur during the Presidential Inaugural and has shown that the design concept provides prescriptive code compliance in accordance with the 2003 Edition of NFPA 101. There are, however, a few requirement that cannot be prescriptively met for reasons of security and constructability. These issues are identified in this section along with a discussion on why the issues cannot meet the prescriptive requirements. Furthermore, alternative means and methods necessary to mitigate the risk to life safety are also provided. It is important to note that NFPA 101 does acknowledge that there is more than one way to achieve code compliance. NFPA 101 Section 1.4.3 permits alternative means and methods to meet the intent of the prescribed code provisions when approved by the authority having jurisdiction. For purposes of this evaluation, the alternative means and methods identified below have been approved by the AOC Fire Marshal, the authority having jurisdiction.

A. Wood Grandstands

Based on the prescriptive code requirements (Section 2.II.J.2 of this Life Safety Evaluation), wood grandstands are required to be located no less than 120 inches from a building with unprotected openings. Since the Presidential Stand grandstands are essentially an extension of the US Capitol, the grandstands would not be permitted to be constructed of wood. However, the need to assemble and disassemble structures quickly and efficiently has led to the use of wood grandstands in previous Inaugurals. The following presents the alternative means and methods offered to meet the prescriptive code requirement for wood grandstands. These alternative means and methods have been recognized and approved by the AOC Fire Marshal:

1) All wood used in the grandstand construction is Fire-Retardant-Treated Wood (FRTW).

2) Two coats of intumescent paint will be applied to all combustible surfaces.

Additional mitigating features associated with the event itself include the following:

1) The DC Fire Department is on-site at strategic locations and readily prepared to respond to any fire scenario.

2) The event is highly supervised so any fire would be detected early.

3) The storage of combustible material beneath the grandstands, which has occurred in previous Inaugurals, is prohibited.

B. Non-Combustible Stage Construction

Based on the prescriptive code requirements (Section 2.II.I.1 of this Life Safety Evaluation), the stage on the Presidential Stand is required to be constructed of non-combustible material. However, the need to assemble and disassemble structures quickly and efficiently and within restricted confines has led to the use of a wood stage in previous Inaugurals. The following presents the alternative means and methods offered to meet the prescriptive code requirement for a non-combustible stage. These alternative means and methods have been recognized and approved by the AOC Fire Marshal:

1) All wood used in the stage construction is Fire-Retardant-Treated Wood (FRTW).

2) Two coats of intumescent paint will be applied to all combustible surfaces.

Additional mitigating features associated with the event itself include the following:

1) The DC Fire Department is on-site at strategic locations and readily prepared to respond to any fire scenario.

2) The event is highly supervised so any fire would be detected early.

3) The AOC Fire Marshal has accepted that the safe rooms located beneath the stage are not contiguous with the stage and are therefore not required to be fire resistance rated. Nevertheless, as an additional mitigating feature for the wood stage, it is recommended that the safe rooms be provided a minimum one-hour fire resistance rating.

C. Door Swing at the US Capitol

Based on the prescriptive code requirements (Section 2.II.E.3 of this Life Safety Evaluation), the door leading to the US Capitol is required to swing into the Capitol Building (in the direction of egress travel). However, due to the temporary nature of the event and the historic fabric of the US Capitol, the door has not been reversed in previous Inaugurals. The following presents the alternative method offered to meet the prescriptive code requirement for door swing. This alternative method has been recognized and approved by the AOC Fire Marshal:

1) The door leading into the US Capitol will be held open by hold open devices for the duration of the event and until all occupants have evacuated the assembly space.

D. Locked Egress Gates

Based on the prescriptive code requirements (Section 2.II.E.4 of this Life Safety Evaluation), the gates in the means of egress are required to remain openable from the egress side at all times without the use of any key or special knowledge. However, due to strict security at this event, the gates located between the lawn seating areas and the lawn standing areas have been kept locked throughout the event in previous Inaugurals. The following presents the alternative means offered to meet the prescriptive code requirement for locks egress components. This alternative means has been recognized and approved by the AOC Fire Marshal:

1) US Capitol Police officers are stationed at each gate throughout the entire event until all occupants have exited. These officers are provided a key and maintain the key on themselves at all times throughout the duration of the event and until all occupants have exited the assembly space.

E. Wheelchair Dispersion

Based on the prescriptive code requirements of IBC Section 1108, wheelchairs must be dispersed throughout the event in multiple clusters based on the availability of accessible routes to various seating areas. However, due to security and site control restraints, a limited number of wheelchair clusters have been provided in previous Inaugurals. The following presents the alternative means offered to meet the prescriptive code requirement for wheelchair dispersion:

1) Dedicated wheelchair clusters are provided throughout the event in locations that does not require the occupants to cross a grass surface. Each

wheelchair cluster is provided with space for more than the minimum number of wheelchairs required by code and each cluster is provided accessible routes and accessible means of egress.

Additional mitigating features associated with the event itself include the following:

1) Crowd management personnel are available to assist in the evacuation of disabled occupants in the event of an emergency.

F. Common Path of Travel

Based on the prescriptive code requirements (Section II.H.1 of this Life Safety Evaluation), common path of travel is restricted to 50 feet from any seat to a point where a person has a choice of two directions of egress travel. The stage on the Presidential Stand is provided a ramp to the US Capitol and two emergency exit stairs. The two emergency exit stairs were originally designed to be used by the President only in the event of an emergency. Therefore, in previous Inaugurals, the ramp leading to the US Capitol was considered the only required egress path from the stage. This single path of egress resulted in a common path of travel for occupants on the stage greater than the code maximum of 50 feet. The following presents the alternative means and methods offered to meet the prescriptive code requirement for the common path of travel deficiency on the stage. These alternative means and methods have been recognized by the AOC Fire Marshal; however, a decision on which alternative is to be utilized in the 2009 Inaugural will not been made by AOC until all stakeholders in the matter have been consulted.

1) Option 1: Egress arrangement will remain as it was in the 2005 Inaugural and the AOC Fire Marshal will accept the common path of travel from the stage.

2) Option 2: The south emergency exit stair will be used as a required means of egress for occupants on the stage. The use of the stair by occupants on the stage will not happen until the President and others, as designated, are evacuated. It is noted that there will be adequate capacity for occupants to use the south emergency exit stair. The life safety drawings supporting the design concept that are provided in Tab 4 (Life Safety Drawings) show this option. This option is acceptable by the AOC Fire Marshal; however, must be approved, at a minimum, by the US Capitol Police and Secret Service.

3) Option 3: A portion of the Balustrade on the north side of the stage will be removed to allow for a second exit from the stage. It is noted that seats on the stage will be lost with the removal of the balustrade and the minimum clear width that must be maintained through this opening will be 48 inches. This option has been considered acceptable by the AOC Fire Marshal; however, must be approved by others at AOC. While not shown on the concept drawings in Tab 4 (Life Safety Drawings), the egress arrangement of Option 3 will have adequate exit capacity.